

## **Eek Lake Sockeye Salmon (*Oncorhynchus nerka*) Stock Assessment Project 2003 Annual Report**

The village of Hydaburg, founded in 1911, was located in close proximity to sockeye salmon (*Oncorhynchus nerka*) streams in Hetta Inlet, especially the Hetta Lake system. Subsistence fishers from Hydaburg, however, frequently target sockeye salmon in Eek Inlet when returns to the Hetta Lake system are low. Eek Inlet is also closer to Hydaburg than Hetta Cove, making travel cheaper and easier especially in rough weather. Residents in Hydaburg have recently become concerned about apparent declines in sockeye harvests in both the Hetta and Eek subsistence fisheries. In 2003, the Hydaburg Cooperative Association, in cooperation with the Alaska Department of Fish and Game (ADF&G), initiated a sockeye research project in Eek Lake. We interviewed subsistence fishers to get an accurate estimate of the harvest, estimated sockeye spawning population using mark recapture methods, and described zooplankton population sizes and the physical characteristics of the lake to evaluate the productivity of Eek Lake. In 2003, subsistence fishers from Hydaburg harvested about 1,100 sockeye salmon in the Eek Inlet subsistence fishery but only reported harvesting 153 fish on the state subsistence permits. We estimated about 1,200 sockeye salmon spawned into Eek Lake in 2003. Our first look at the freshwater environment in Eek Lake showed a shallow (4 m) euphotic zone depth, extensive heating in the summer months, and a very simple zooplankton community dominated by the copepod *Cyclops*. The response of the zooplankton populations to the number of off-spring produced by the spawning population will, in part, assist biologist in determining the level of escapement needed to sustain this population while providing subsistence opportunities. We recommend continued monitoring of sockeye subsistence harvest and escapement in this system, as well as additional assessment of the freshwater habitat.

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